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Crop Focus: Beans

One Hardy Bean

New pinto produces top yields even under high stress.

PHIL Miklas thinks he and his colleagues with USDA's Agricultural Research Service have come up with a winner. The research geneticist at the Vegetable and Forage Crops Production Research Unit in Prosser, WA, believes that Quincy, a new pinto bean, could give growers an edge. Not only does Quincy deliver top yields, but it does so in stressful conditions.

Miklas said he and his fellow researchers put the bean through rigorous tests, and each time Quincy passed with flying colors, despite the tough growing conditions. "We call it our purgatory plot," says Miklas. "We don't fertilize, we use only 50% of the normal amount of water, and we grow it in compacted soil."

In addition, Quincy should provide added insurance against attack by the bean common mosaic virus (BCMV). The cultivar harbors two genes, I and bc-22, that confer resistance to all known strains of BCMV — plus bean common mosaic necrosis virus (BCMNV) — says Miklas.

In pinto and other dry beans, severe outbreaks of the two viruses can inflict seed-yield losses up to 60%. They threaten the \$512 million annual dry bean crop in California, Colorado, Idaho, Michigan, Nebraska, North Dakota, and Washington. Also at risk are \$190 million worth of snap beans from Florida, Illinois, New York, Oregon, Wisconsin, and other states. Miklas believes Quincy will thrive in the West, but may not be adapted to dry bean production areas in such Midwestern states as North Dakota and Minnesota.

It's A First

Quincy is the first commercial pinto with the specific combination of genes to completely control the seedborne BCMV and BCMNV spread between plants by aphids. Insecticide spraying, clean-seed programs, and sanitation are the standard controls, but genetic resistance is the bedrock defense.

Miklas and colleagues developed Quincy from a cross between Othello, a popular commercial pinto cultivar, and the black bean germplasm line A-55. While Quincy resists BCMV and BCMNV and fends off curly top virus, it's susceptible to *Uromyces appendiculatus*, the fungus that causes bean rust disease.

In field trials, Quincy produced seed yields consistently higher than Othello and another cultivar, Burke. The tests were conducted in Washington, Colorado, and other states under optimal and high-stress conditions, including soils with little residual nitrogen or moisture.

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